IN THE CLAIMS

1. (previously presented) A diffractive transfer lens for coupling a light source to a light conducting medium comprising:

a diffractive surface that is defined by a surface function that includes

a first phase function having angular symmetry, and

a second phase function having radial symmetry and a cusp region; wherein the cusp region has a discontinuous slope therein.

2. (previously presented) The transfer lens of claim 1 wherein the first phase function is a spiral phase function; and wherein the second phase function is a cone phase function.

3. (currently amended) The transfer lens of claim 2 wherein the spiral phase function can be expressed as follows:

$$\phi = m_S * \theta$$

where 'm_S' is a real number that describes how fast the phase changes as one traverses a circle about the center of the aperture; wherein 'θ' is an angular coordinate; and

the cone phase function can be expressed as follows:

$$\phi = 2\pi m_C * \rho$$

where 'm_C' is a real number that describes how fast the phase changes as one traverses a radial line from the center of the aperture;

wherein 'ρ' is a normalized radial coordinate; wherein ρ is equal to 1 at the edge of the aperture, and ρ is equal to zero at the center of the aperture.

4. (previously presented) The transfer lens of claim 3 wherein m_S is equal to =3 and m_C is equal to -2.

5. (previously presented) The transfer lens of claim 1 wherein the transfer lens provides reflection management so that light reflected from the end of the optical fiber is not directed to a location at which light is emitted by the laser.

6. (previously presented) The transfer lens of claim 1 wherein the transfer lens provides favorable launch conditions so that light launched into the optical fiber avoids index anomalies along the axis of the optical fiber.

7. (previously presented) The transfer lens of claim 1 further comprising:

an optical surface for focusing the light onto the optical fiber; and

wherein the diffractive surface receives and collimates the light originating from a light source.

8. (previously presented) The transfer lens of claim 1 further comprising:

a packaging for housing the light source;

wherein the diffractive surface is disposed in the housing.

9. (currently amended) An optical module for coupling to an optical fiber comprising:

a laser for emitting light;

a transfer lens for transferring light emitted by the laser into the optical fiber; wherein the transfer lens includes

a diffractive surface that is defined by a surface function; wherein the surface function includes a first phase function <u>having angular symmetry</u> combined with a second phase function for providing favorable launch conditions and reflection management.

10. (currently amended) The optical module of claim 9 ~~wherein the first phase function has angular symmetry; and~~

wherein the second phase function has radial symmetry and a cusp region with a discontinuous slope.

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11. (previously presented) The optical module of claim 9 wherein the transfer lens provides reflection management so that light reflected from the end of the optical fiber is not directed to a location at which light is emitted by the laser.

12. (previously presented) The optical module of claim 9 wherein the transfer lens provides favorable launch conditions so that light launched into the optical fiber avoids index anomalies along the axis of the optical fiber.

13. (previously presented) The optical module of claim 9 wherein the optical module is one of an optical receiver, an optical transmitter, and an optical transceiver.

14. (previously presented) The optical module of claim 9 wherein the first phase function is a spiral phase function; and wherein the second phase function is a cone phase function.

15. (currently amended) The optical module of claim 10 wherein the spiral phase function can be expressed as follows:

$$\phi = m_S * \theta$$

where 'm_S' is a real number that describes how fast the phase changes as one traverses a circle about the center of the aperture; wherein 'θ' is an angular coordinate; and

the cone phase function can be expressed as follows:

$$\phi = 2\pi m_C * \rho$$

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where 'm_C' is a real number that describes how fast the phase changes as one traverses a radial line from the center of the aperture;

wherein 'ρ' is a normalized radial coordinate; wherein ρ is equal to 1 at the edge of the aperture, and ρ is equal to zero at the center of the aperture.

16. (previously presented) The optical module of claim 15 wherein m_S is equal to =3 and m_C is equal to -2.

17. (previously presented) The optical module of claim 9 further comprising:

an optical surface for focusing the light onto the optical fiber; and

wherein the diffractive surface receives and collimates the light originating form the laser.

18. (previously presented) The transfer lens of claim 9 further comprising:

a packaging for housing the light source;

wherein the diffractive surface is disposed in the housing.

19. (previously presented) A method for manufacturing a diffractive surface for use in a transfer lens comprising:

defining a first phase function having angular symmetry;

defining a second phase function having radial symmetry and a cusp region; wherein the cusp region has a discontinuous slope therein;

defining a surface function that includes the first phase function and the second function; and

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employing semiconductor processing techniques to manufacture a diffractive surface for use in the transfer lens in accordance with the surface function.

20. (previously presented) The method of claim 19 further comprising:

adding a third phase function to the surface function;

wherein the third phase function includes one of a lens phase function, an aberration control phase function, a prism phase function, and a grating phase function.